

AMENDMENTS TO THE SPECIFICATION

Please replace the title on page 1 with the following new title:

~~(METH)ACRYLAMIDE POLYMER, PROCESS FOR PRODUCTION THEREOF,~~
~~PAPER MAKING CHEMICALS, PAPERS CONTAINING SAME~~
PAPERMAKING CHEMICAL, METHOD FOR MANUFACTURING SAME, AND
PAPER CONTAINING SAME

Please replace the heading on page 1 before the first complete paragraph with the following section headings:

TECHNICAL FIELD -- BACKGROUND OF THE INVENTION

Field of the Invention --

Please replace the first complete paragraph on page 1 with the following replacement paragraph:

This invention relates to a ~~(meth)acrylamide polymer~~papermaking chemical, a method for manufacturing this ~~(meth)acrylamide polymer~~, a papermaking chemical, and paper containing the same, and more particularly relates to a papermaking chemical exhibiting an excellent paper strengthening effect, drainage improvement effect, retention improvement effect, plybond strength enhancing effect, surface strength enhancing effect, and sizing improvement effect in acid, neutral, or alkaline papermaking systems; a ~~(meth)acrylamide polymer capable of forming this papermaking chemical~~; a method for manufacturing this a papermaking chemical containing a (meth)acrylamide polymer; with which this papermaking chemical can be formed; and paper that makes use of this (meth)acrylamide polymer and as a result has excellent bursting strength, internal bond strength, and other such properties.

Please replace the first complete paragraph on page 2 with the following replacement paragraph:

Various kinds of papermaking chemicals have been used in the papermaking process in the past for the purpose of raising productivity through ~~with high-speed paper machines~~higher machinery speed, or improving the paper quality. (Meth)acrylamide polymers are especially important chemicals in terms of improving paper quality and raising productivity, and as such these chemicals are being used in an increasingly wide range of applications and continue to be improved.

Please replace the section heading on page 7, at line 1, with the following new section heading:

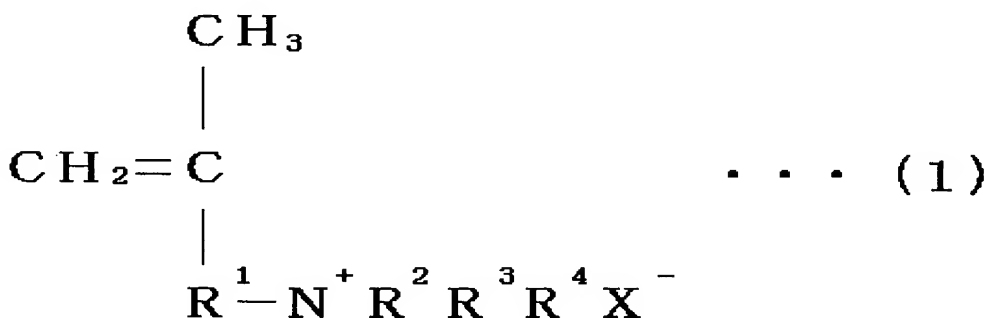
-- DISCLOSURE SUMMARY OF THE INVENTION --

Please replace the second complete paragraph on page 7, and continuing over to pages 8, 9, 10 and 11, with the following replacement paragraph:

Specifically, the present invention, which is the means for solving the above problems, provides:

(1) A papermaking chemical, containing (meth)acrylamide polymer produced by polymerizing a monomer (a) expressed by the following general formula 1, the following monomer (b), and the following monomer (c):

(a) general formula 1



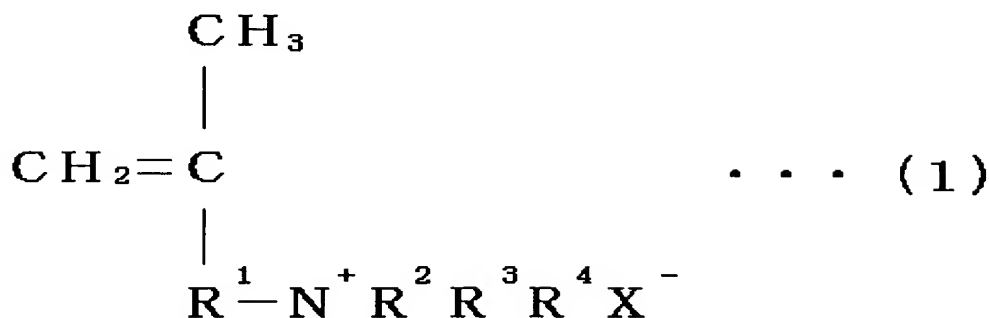
(where R¹ is a C₁ to C₄ alkylene group, R² to R⁴ are each a hydrogen atom or C₂₂ or lower alkyl group that may have a substituent (two or three of R² to R⁴ may not be hydrogen atoms), and X⁻ is an anion of an inorganic acid or an organic acid);

(b) a (meth)acrylamide;

(c) an ionic monomer other than monomer (a) expressed by general formula 1 above.

(2) A papermaking chemical, containing a (meth)acrylamide polymer, produced by polymerizing a monomer (a) expressed by the following general formula 1, the following monomer (b), the following monomer (c), and a crosslinking agent (d):

(a) general formula 1



(where R¹ is a C₁ to C₄ alkylene group, R² to R⁴ are each a hydrogen atom or C₂₂ or lower alkyl group that may have a substituent (two or three of R² to R⁴ may not be hydrogen atoms), and X⁻ is an anion of an inorganic acid or an organic acid);

(b) a (meth)acrylamide;

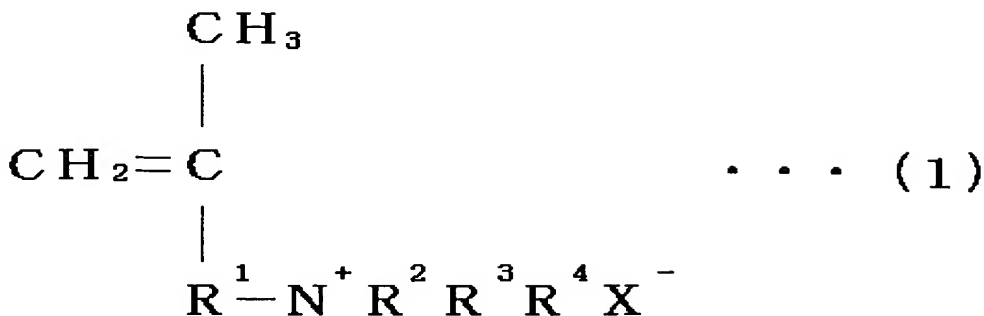
(c) an ionic monomer other than monomer (a) expressed by general formula 1 above.

(3) A method for manufacturing the papermaking chemical containing a (meth)acrylamide polymer according to (1) above, wherein at least one member selected from the group consisting of the monomer (a), monomer (b), and monomer (c) according to (1) above is polymerized, and the remaining monomers are added during this polymerization.

(4) A method for manufacturing the papermaking chemical containing a (meth)acrylamide polymer according to (2) above, wherein at least one member selected from the group consisting of the monomer (a), monomer (b), monomer (c), and crosslinking agent (d) according to (2) above is polymerized, and the remaining monomers are added during this polymerization.

(5) A papermaking chemical, containing a (meth)acrylamide polymer, produced by polymerizing a monomer (a) expressed by the following general formula 1, the following monomer (b), the following monomer (c1), the following monomer (c2), and a crosslinking agent (d):

(a) general formula 1



(where R¹ is a C₁ to C₄ alkylene group, R² to R⁴ are each a hydrogen atom or C₂₂ or lower alkyl group that may have a substituent (two or three of R² to R⁴ may not be hydrogen atoms), and X⁻ is an anion of an inorganic acid or an organic acid);

(b) a (meth)acrylamide;

(c1) a (meth)allylsulfonic acid (salt);

(c2) an ionic monomer other than the monomer (a) and the monomer (c1).

(6) A method for manufacturing the papermaking chemical containing a (meth)acrylamide polymer according to (5) above, wherein at least one member selected from the group consisting of the monomer (a), monomer (b), monomer (c1), monomer (c2), and crosslinking agent (d) according to (5) above is polymerized, and the remaining monomers are added during this polymerization.

(7) ~~The~~ A papermaking chemical, containing the (meth)acrylamide polymer according to any of (1), (2), and (5) above, ~~wherein produced by the polymerization is conducted~~ in the presence of a urea compound (e).

(8) The method for manufacturing a papermaking chemical containing a (meth)acrylamide polymer according to any of (3), (4), and (6) above, wherein the polymerization is conducted in the presence of a urea compound (e).

(9) A papermaking chemical, containing the (meth)acrylamide polymer according to any of (1), (2), (5), and (7) above is a paper strength agent.

~~(10) The papermaking chemical according to (9), wherein the papermaking chemical containing the (meth)acrylamide polymer according to any of (1), (2), (5), and (7) above is a paper strength agent.~~

(11)(10) Paper containing the papermaking chemical according to (9) or (10) above.

Please replace the section heading on page 11 before the last paragraph, beginning "The monomer (a) used in the present invention..." with the following new section heading:

-- ~~BEST MODE FOR CARRYING OUT~~ DETAILED DESCRIPTION OF THE INVENTION

Please replace the paragraph on page 38 and continuing onto page 39, beginning "In the method for manufacture.....", with the following replacement paragraph:

In the method for manufacturing a papermaking chemical containing a (meth)acrylamide polymer pertaining to the present invention that is characterized in that at least one member selected from the group consisting of the above-mentioned monomer (a), monomer (b), and monomer (c) is polymerized, and the remaining monomers are added during the polymerization, from the standpoint of the properties of the papermaking chemical and the (meth)acrylamide polymer, monomers (A) may be monomers containing at least one component out of the various components of the above-mentioned monomer (a), monomer (b), and monomer (c), but it is particularly favorable for them to be monomers containing components of each of the above-mentioned monomer (a), monomer (b), and monomer (c). Monomers (B) may be monomers containing at least one component out of the various components of the above-mentioned monomer (a), monomer (b), and monomer (c), but it is particularly favorable for them to be monomers containing just the above-mentioned monomer (c) component, or a monomer containing components of each of the above-mentioned monomer (a), monomer (b), and monomer (c).